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# HATCHERIES TO MITIGATE FOR LOSSES

*Hatcheries are a tool,  
not a substitute for natural spawning  
or restoration of habitat...*



PHOTO: BUREAU OF RECLAMATION

*Hatcheries were not invented to outdo Mother Nature.  
Hatcheries are a manmade tool for softening the  
impact of dams and water diversions on fish life.*

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### Hatcheries help maintain fish production numbers

Before there were dams and hatcheries, California's rivers—flowing wild and free—easily sustained the state's plentiful salmon and steelhead trout resource. Hatcheries were not invented to outdo Mother Nature. Hatcheries are a manmade tool for softening the impact of dams and water diversions on fish life.

Since 1870, in one form or another, state law has required dam builders to provide hatcheries or to "ladder" fish around their structures. Fish ladders allow spawners to bypass the dam and resume their journey upstream, to spawn naturally. Hatcheries are nurseries to breed and grow fish that cannot move upstream of dams to spawn naturally. The intent of hatcheries, then, is to mitigate for the loss of production from these upstream spawning grounds by growing fish in an artificial setting. *Eight of the state's nine salmon and steelhead hatcheries are mitigation hatcheries.*

The Department of Fish and Game has turned the hatcheries, some of which are more than 40 years old, into extremely productive operations. California's salmon and steelhead hatcheries produce more than 50 million juvenile fish each year. Forty-eight percent (48%) of the fall-run king salmon that spawn in the Sacramento River basin are reported to be progeny from just two hatcheries, Nimbus and Feather River. Further, fall-run Sacramento River basin spawners now produce 70% of the entire statewide salmon harvest. For a variety of reasons, *hatcheries*



*As natural habitat diminished, hatcheries shouldered more of the production burden.*

PHOTO: BUREAU OF RECLAMATION

*have not mitigated for the loss of natural spawning populations, as documented by the decline.* Nevertheless, California has come to rely heavily on her hatcheries for salmon and steelhead production.

Originally, hatcheries released juvenile fish directly into their home streams; from there, the fish made their long journey downstream to the ocean. In

recent years, inadequate stream flow, un-screened diversions, irrigation pumps and other factors have hampered downstream migrations. Millions of fish never made it to the ocean, to live the adult part of their life cycle.

A program of trucking fish downstream was initiated and for the past 20 years, hatchery managers have boosted juvenile survival numbers by trucking larger and larger portions of their young fish to the San Francisco Bay estuary, and even to the Bay itself. Spared from the hazards just mentioned, these hatchery fish have returned to spawn at increasing rates.

On the surface, the trucking program seems an efficient management innovation. It has increased juvenile survival and spawning returns of hatchery stock. The four-wheel substitute for downstream flows neither addresses nor resolves the serious problems that hamper downstream migration of natural spawning populations.

At the same time that greater effort has been placed in a trucking program to improve the survival of hatchery fish, the number of

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***"The loss of juvenile salmon to unscreened or inadequately screened irrigation diversions has reached intolerable levels..."***

king salmon spawning naturally in the river has continued to decline. Steady deterioration of the natural productivity has caused even greater dependency on the hatchery system and trucking efforts.

**Natural spawning preserves vitality of the resource**

An over reliance on hatcheries is dangerous and could leave California's salmon and steelhead resource at risk. The artificial hatchery regimen produces 'carbon copy' fish that lack a necessary survival quality — genetic diversity. Hatcheries also crowd fish and their spawn; this can magnify the toll of diseases and other catastrophes, including mechanical failures and human errors. Remember, half of the Sacramento River basin fall-run king salmon production comes from just two hatcheries and this river basin produces 70% of the entire statewide harvest. One catastrophe could have a devastating effect on the state's *entire* salmon resource!

Natural, in-river spawning lowers the risks of such catastrophes. It improves chances for survival by distributing the fish throughout the spawning grounds and the time of spawning throughout the season. It assures there will be the diversity so critical to salmon survival through the ages. *Hatchery stock can strengthen production numbers but natural populations are essential to maintain the balance, to truly protect and conserve the salmon and steelhead resource.*

To maintain natural spawning populations, California must better protect, restore and enhance spawning and rearing habitat. Adequate flows and protection from unscreened or inadequately screened water diversions must be assured. (Such downstream stream-low improvements would also, incidentally, benefit hatchery stocks and may reduce the

*Hatcheries crowd fish and their spawn; disease outbreaks can be devastating.*



PHOTO: BUREAU OF RECLAMATION

need for such extensive trucking efforts.) It is, in fact, the explicit policy of the California Fish and Game Commission that the state conserve salmon and steelhead through the vigorous protection of instream habitat. The problems on the Sacramento River are just one of many examples that the policy has not been followed.

With proper facilities and better stream

flows, California's hatcheries help make up fish lost to dams and diversions. But they are not, and were never intended to be, a substitute or habitat protection and natural spawning. *A cautious balance must be struck between hatcheries and natural production on every watershed where hatcheries exist.*

## FINDINGS AND RECOMMENDATIONS: HATCHERIES

- Anadromous fish hatcheries are a mitigation tool. They have been built to make up for spawning and rearing losses due to dams, diversions and reductions in stream flow. They were not and are not intended to replace natural spawning or habitat protection as a means of preserving the resource or maintaining fish production numbers. Natural production systems best provide and sustain stock vigor and diversity, which is critical to the survival of these species. Therefore, natural spawning habitat must be protected, restored and enhanced to preserve the unique characteristics so fundamental to the survival of this resource.

**ACTION:** The Legislature should declare it a policy of the state to restore and enhance the salmon and steelhead fisheries. Such policy should encourage the improvement of instream habitat and the elimination of man-made factors that destroy juvenile fish. (See SB-2261, page 53.)

- *Over reliance on hatchery production can have negative results.* In fact, hatchery production of salmon and steelhead trout in California may already be at the maximum level it should occupy in a balanced program of

hatchery and natural production. Caution is indicated, as the Department of Fish and Game has no proven genetics policy, nor established guidelines, for determining the mix of hatchery and natural stocks in each watershed. Because of this, it has made no clear provisions for preserving the vigor and integrity of the natural spawning populations. The Advisory Committee has provided the DFG with a format for such a policy. The DFG has agreed to adopt the format, but has not yet done so.

**ACTION:** The Legislature should direct the Department of Fish and Game to set a completion date for adoption of a salmon and steelhead genetics policy that addresses hatchery/wild stock issues for each watershed. The Advisory Committee would assist the DFG in this task, or would recommend the project be given to a separate group comprised of specialists from the DFG, U.S. Fish and Wildlife Service, universities, fishery groups and the general public.

- The state has no program or facility dedicated to the preservation of unique genetic

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strains of salmon and steelhead. Such a facility is needed to work with wild salmonids, conduct research, test new equipment, etc.

**ACTION:** The Legislature should direct the DFG to develop, build, and operate a research facility dedicated to preservation and development of wild salmonid diversity. Appropriate funding and staffing should be provided.

- The DFG has done an exemplary job of increasing production and survivability at its anadromous fish hatcheries. The DFG has been developing consistent operating procedures at all hatcheries. The process of standardizing operations is about 50% complete. In some cases, hatcheries are nearly a half-century old and require modernization in order to achieve the desired operating efficiency. The DFG should be encouraged to continue its current efforts to streamline operations and to develop a plan to modernize facilities in order to optimize the investment already made in the hatchery system.

**ACTION:** The Legislature should direct the Department of Fish and Game to complete the job of standardizing hatchery operations. The DFG should be asked to submit a plan and schedule for modernizing those hatcheries that need modification to meet new operations standards. Funds and staffing should be provided.

**ACTION:** The Legislature should memorialize Congress to fund needed improvements at all federal mitigation projects to assure that full mitigation levels of production are soon reached.

- When the state enters into a water diversion agreement with another entity, that entity agrees to “mitigate” or reduce the effects of the project on fish populations by building and maintaining hatchery facilities and producing a specified number of fish annually. There are serious shortcomings in this program. *First,*

*almost without exception, the facilities have not achieved mitigation.* This is due largely to design flaws in the facilities. The federal Coleman National Fish Hatchery has suffered from inadequate water supplies throughout its 45 years of operation. The federal Nimbus Dam was designed to rely on water from nearby Lake Natoma — water which is far too warm for salmon. Cooler water is now piped all the way from Folsom Dam, and even this is inadequate. Second, mitigation agreements frequently become outdated. There are no provisions for revising or updating either mitigation agreements or facilities. Finally, in some cases, mitigation agreements have relinquished instream flows that, subsequently, have been identified as necessary for salmon and steelhead survival. Opportunities to restore stream flow conditions have been rare.

The result of these deficiencies is that mitigators are allowed to make minimum restitution to the fisheries resource while they gain maximum benefits from the water allocation. The work of correcting hatchery problems usually falls, unfairly, on the DFG, as hatchery managers. The burden of rectifying the problems has been absorbed by commercial and sportfishing groups, which have provided funds and labor to correct the problems.

**ACTION:** The Legislature should direct the Department of Fish and Game to analyze the degree to which the state’s salmon and steelhead mitigation hatcheries are achieving the required mitigation. The DFG should advise the Legislature if revisions in agreements or enforcement procedures are needed.

- For nearly 50 years, California laws have sought ‘mitigation’ for the loss of fish and wildlife habitat to development projects. In at least two crucial areas—wetlands and salmon and steelhead habitat—mitigation has failed or is inadequate. This has fostered the steady decline of these resources. There will always be demands for water; it is now time





PHOTO: BUREAU OF RECLAMATION

*Nearly 50 years after its completion, neither stream flow nor hatchery mitigation has been provided by the federal government for the construction of Friant Dam.*

to say no to any more mitigation trade-offs.

**ACTION:** The Legislature should declare the policy of the state that the remaining salmon and steelhead trout habitat will not be diminished further.  
(See SB-2261, page 53.)

- When Friant Dam was built on the San Joaquin River, the U.S. Bureau of Reclamation did not build a hatchery as mitigation for fish losses. Consequently, salmon and steelhead stocks are gone from the river and a hatchery in the San Joaquin basin is essential to rebuild these fisheries and allow the basin to play a role in restoring salmon and steelhead statewide.

**ACTION:** The Legislature should memorialize

Congress to direct the U.S. Bureau of Reclamation to construct, operate and provide adequate water for a hatchery in the San Joaquin River basin, as mitigation for the losses suffered from the construction a Friant Dam.

- When the U.S. Army Corps of Engineer built Coyote Dam across the Russian River for flood control and water supply purposes it cut off ancestral spawning grounds for migrating steelhead trout. To date, there has been no mitigation for losses, estimated 4000 spawning fish per year since 1959.

**ACTION:** The Legislature should memorialize Congress to direct the Secretary of Arm: to schedule funds for the long overdue steel head mitigation facility at Coyote Dam on the Russian River